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<110> Robbins, Jeffrey
Children's Hospital Medical Center

<120> Cardiac-preferred Genetic Alteration of
Transgenic Rabbits

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Phe Asp Ile Arg Thr Glu Cys Phe Val Pro Asp Asp Lys Glu Glu Phe
      35              40              45

gtc aag gcc aag atc gtg tct cgg gag gga ggc aag gtc acc gcc gaa 195
Val Lys Ala Lys Ile Val Ser Arg Glu Gly Gly Lys Val Thr Ala Glu
      50              55              60

acc gag aac ggc aag acg gtg acc gtg aag gag gac cag gtg ttg ca'g 243
Thr Glu Asn Gly Lys Thr Val Thr Val Lys Glu Asp Gln Val Leu Gln
      65              70              75

cag aac cca ccc aag ttc gac aag atc gag gac atg gcc atg ctg acc 291
Gln Asn Pro Pro Lys Phe Asp Lys Ile Glu Asp Met Ala Met Leu Thr
      80              85              90

ttc cta cac gag ccc gct gta ctc tac aac ctc aag gag cgc tac gcg 339
Phe Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala
      95              100              105              110

gct tgg atg att tac acc tac tcg ggc ctc ttc tgc gtc acc gtc aac 387
Ala Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn
      115              120              125

ccc tac aag tgg ctg ccg gtg tac aat gca gag gtg gtg gcc gcc tac 435
Pro Tyr Lys Trp Leu Pro Val Tyr Asn Ala Glu Val Val Ala Ala Tyr
      130              135              140

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cgg ggc aag aag agg agc gag gcc ccg ccc cac atc ttc tcc atc tct	483
Arg Gly Lys Lys Arg Ser Glu Ala Pro Pro His Ile Phe Ser Ile Ser	
145 150 155	
gac aac gcc tat cag tac atg cta aca gat cgg gaa aac cag tcc atc	531
Asp Asn Ala Tyr Gln Tyr Met Leu Thr Asp Arg Glu Asn Gln Ser Ile	
160 165 170	
ctc atc acc gga gaa tcc ggg gcg ggg aag aca gtg aac acc aag cgt	579
Leu Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg	
175 180 185 190	
gtc atc cag tac ttt gcc agt att gca gcc att ggt gac cgg ggc aag	627
Val Ile Gln Tyr Phe Ala Ser Ile Ala Ala Ile Gly Asp Arg Gly Lys	
195 200 205	
aag gac aac gtc aat gcc aac aag ggc acc ctg gag gac cag atc atc	675
Lys Asp Asn Val Asn Ala Asn Lys Gly Thr Leu Glu Asp Gln Ile Ile	
210 215 220	
cag gcc aac cct gcc ttg gag gcc ttc ggc aac gcc aag acc gtc cgg	723
Gln Ala Asn Pro Ala Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg	
225 230 235	
aac gac aac tcc tcg cgc ttc ggg aaa ttc atc aga atc cac ttt gga	771
Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly	
240 245 250	
gcc act gga aag ctg gct tct gcg gac ata gag acc tac ctg ctg gag	819
Ala Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu	
255 260 265 270	
aag tcc cgg gtg atc ttc cag ctg aag gct gag agg aac tac cac atc	867
Lys Ser Arg Val Ile Phe Gln Leu Lys Ala Glu Arg Asn Tyr His Ile	
275 280 285	
ttc tac cag atc ctg tcc aac aag aag ccg gag ctg ctg gac atg ctg	915
Phe Tyr Gln Ile Leu Ser Asn Lys Lys Pro Glu Leu Leu Asp Met Leu	
290 295 300	
ctg atc aca aac aac ccc tac gac tac gcc ttc gtg tcc cag gga gag	963
Leu Ile Thr Asn Asn Pro Tyr Asp Tyr Ala Phe Val Ser Gln Gly Glu	
305 310 315	
gtg tcc gtg gcc tcc atc gac gac tcc gag gag ctc atg gcc acc gat	1011
Val Ser Val Ala Ser Ile Asp Asp Ser Glu Glu Leu Met Ala Thr Asp	
320 325 330	
aac gcc ttc gac gtg ctg ggc ttc agt tct gag gag aaa gtc ggc atc	1059
Asn Ala Phe Asp Val Leu Gly Phe Ser Ser Glu Glu Lys Val Gly Ile	
335 340 345 350	
tac aag ctg acg ggc gcc atc atg cac tac gga aac atg aag ttc aag	1107
Tyr Lys Leu Thr Gly Ala Ile Met His Tyr Gly Asn Met Lys Phe Lys	
355 360 365	
cag aag cag cgt gag gag cag gcg gag ccg gac ggc acc gaa gat gcc	1155

Gln	Lys	Gln	Arg	Glu	Glu	Gln	Ala	Glu	Pro	Asp	Gly	Thr	Glu	Asp	Ala		
			370					375					380				
gac	aag	tcc	gcc	tac	ctc	atg	ggg	ctg	aac	tcc	gct	gac	ctg	ctc	aag	1203	
Asp	Lys	Ser	Ala	Tyr	Leu	Met	Gly	Leu	Asn	Ser	Ala	Asp	Leu	Leu	Lys		
		385					390				395						
ggg	ctg	tgc	cac	cct	cgg	gtg	aaa	gtg	ggc	aac	gag	tac	gtc	acc	aag	1251	
Gly	Leu	Cys	His	Pro	Arg	Val	Lys	Val	Gly	Asn	Glu	Tyr	Val	Thr	Lys		
	400					405					410						
ggg	cag	aac	gtg	cag	cag	gtg	tac	tac	tcc	atc	ggg	gcg	ctg	gcc	aag	1299	
Gly	Gln	Asn	Val	Gln	Gln	Val	Tyr	Tyr	Ser	Ile	Gly	Ala	Leu	Ala	Lys		
	415				420					425					430		
gcc	gtg	tac	gag	aag	atg	ttc	aac	tgg	atg	gtg	atg	cgc	atc	aat	gcc	1347	
Ala	Val	Tyr	Glu	Lys	Met	Phe	Asn	Trp	Met	Val	Met	Arg	Ile	Asn	Ala		
				435					440					445			
acg	ctg	gag	acc	aag	ctg	ccg	cgc	cag	tac	ttc	ata	ggc	gtc	ctc	gac	1395	
Thr	Leu	Glu	Thr	Lys	Leu	Pro	Arg	Gln	Tyr	Phe	Ile	Gly	Val	Leu	Asp		
			450					455					460				
atc	gcg	ggc	ttc	gag	atc	ttt	gac	ttc	aac	agc	ttt	gag	cag	ctt	tgc	1443	
Ile	Ala	Gly	Phe	Glu	Ile	Phe	Asp	Phe	Asn	Ser	Phe	Glu	Gln	Leu	Cys		
		465					470					475					
atc	aac	ttc	acc	aac	gag	aag	ctg	cag	cag	ttc	ttc	aac	cac	cac	atg	1491	
Ile	Asn	Phe	Thr	Asn	Glu	Lys	Leu	Gln	Gln	Phe	Phe	Asn	His	His	Met		
	480					485					490						
ttc	gtg	ctg	gag	cag	gag	gag	tac	aag	aag	gag	ggc	atc	gag	tgg	gag	1539	
Phe	Val	Leu	Glu	Gln	Glu	Glu	Tyr	Lys	Lys	Glu	Gly	Ile	Glu	Trp	Glu		
	495				500					505					510		
ttc	atc	gac	ttc	ggc	atg	gac	ctg	cag	gcc	tgc	atc	gac	ctc	att	gag	1587	
Phe	Ile	Asp	Phe	Gly	Met	Asp	Leu	Gln	Ala	Cys	Ile	Asp	Leu	Ile	Glu		
			515						520				525				
aag	ccc	atg	ggc	atc	atg	tcc	atc	ctg	gag	gag	gag	tgc	atg	ttc	ccc	1635	
Lys	Pro	Met	Gly	Ile	Met	Ser	Ile	Leu	Glu	Glu	Glu	Cys	Met	Phe	Pro		
			530					535				540					
aag	gcc	acc	gac	atg	acc	ttc	aag	gcc	aag	cta	tac	gac	aac	cac	ctg	1683	
Lys	Ala	Thr	Asp	Met	Thr	Phe	Lys	Ala	Lys	Leu	Tyr	Asp	Asn	His	Leu		
		545					550					555					
ggc	aag	tcc	aac	aac	ttc	cag	aag	cca	cgc	aac	gtc	aag	ggg	aag	cag	1731	
Gly	Lys	Ser	Asn	Asn	Phe	Gln	Lys	Pro	Arg	Asn	Val	Lys	Gly	Lys	Gln		
	560					565					570						
gaa	gcc	cac	ttc	tcc	ctg	gtc	cac	tac	gcc	ggc	acc	gtg	gac	tac	aac	1779	
Glu	Ala	His	Phe	Ser	Leu	Val	His	Tyr	Ala	Gly	Thr	Val	Asp	Tyr	Asn		
	575				580					585					590		
atc	ctg	ggc	tgg	ctg	gag	aag	aac	aag	gac	cct	ctc	aac	gag	acg	gtg	1827	
Ile	Leu	Gly	Trp	Leu	Glu	Lys	Asn	Lys	Asp	Pro	Leu	Asn	Glu	Thr	Val		

595										600					605					
gtg	ggc	ctg	tac	cag	aag	tcc	tcc	ctc	aag	ctg	atg	gcc	acc	ctc	ttc	1875				
Val	Gly	Leu	Tyr	Gln	Lys	Ser	Ser	Leu	Lys	Leu	Met	Ala	Thr	Leu	Phe					
610								615				620								
gcc	acc	tat	gct	tct	gcc	gac	act	gcg	gac	act	ggc	aaa	ggc	aaa	gga	1923				
Ala	Thr	Tyr	Ala	Ser	Ala	Asp	Thr	Ala	Asp	Thr	Gly	Lys	Gly	Lys	Gly					
625								630				635								
ggc	aag	aaa	aag	ggc	tcg	tcc	ttc	cag	aca	gtg	tca	gct	ctc	cac	cgg	1971				
Gly	Lys	Lys	Lys	Gly	Ser	Ser	Phe	Gln	Thr	Val	Ser	Ala	Leu	His	Arg					
640								645				650								
gaa	aat	ctg	aac	aag	ctg	atg	acc	aac	ctg	agg	acc	acc	cac	cct	cac	2019				
Glu	Asn	Leu	Asn	Lys	Leu	Met	Thr	Asn	Leu	Arg	Thr	Thr	His	Pro	His					
655				660				665				670								
ttc	gtg	cgc	tgc	atc	atc	ccc	aat	gag	cgg	aag	gct	cca	ggg	gtg	atg	2067				
Phe	Val	Arg	Cys	Ile	Ile	Pro	Asn	Glu	Arg	Lys	Ala	Pro	Gly	Val	Met					
				675				680				685								
gac	aac	ccc	ctg	gtc	atg	cac	cag	ctg	cgt	tgc	aac	ggc	gtg	ctg	gaa	2115				
Asp	Asn	Pro	Leu	Val	Met	His	Gln	Leu	Arg	Cys	Asn	Gly	Val	Leu	Glu					
690								695				700								
ggc	att	cgc	atc	tgc	agg	aag	ggc	ttc	ccc	aac	cgc	atc	ctc	tac	ggg	2163				
Gly	Ile	Arg	Ile	Cys	Arg	Lys	Gly	Phe	Pro	Asn	Arg	Ile	Leu	Tyr	Gly					
705								710				715								
gac	ttc	cgg	cag	agg	tac	cgc	atc	ctg	aac	cca	gcg	gcc	atc	cct	gag	2211				
Asp	Phe	Arg	Gln	Arg	Tyr	Arg	Ile	Leu	Asn	Pro	Ala	Ala	Ile	Pro	Glu					
720				725				730												
ggc	cag	ttc	att	gac	agc	agg	aag	ggg	gcg	gag	aag	ctg	ctg	ggc	tcc	2259				
Gly	Gln	Phe	Ile	Asp	Ser	Arg	Lys	Gly	Ala	Glu	Lys	Leu	Leu	Gly	Ser					
735				740				745				750								
ctg	gac	att	gac	cac	aac	cag	tac	aag	ttc	ggc	cac	acc	aag	gtg	ttc	2307				
Leu	Asp	Ile	Asp	His	Asn	Gln	Tyr	Lys	Phe	Gly	His	Thr	Lys	Val	Phe					
				755				760				765								
ttc	aag	gcc	ggg	ctg	ctg	ggg	ctg	ctg	gag	gag	atg	cgg	gac	gag	agg	2355				
Phe	Lys	Ala	Gly	Leu	Leu	Gly	Leu	Leu	Glu	Glu	Met	Arg	Asp	Glu	Arg					
770				775				780												
ctg	agc	cgc	atc	atc	acg	cgc	atc	cag	gcc	cag	tcc	cgg	ggc	cag	ctc	2403				
Leu	Ser	Arg	Ile	Ile	Thr	Arg	Ile	Gln	Ala	Gln	Ser	Arg	Gly	Gln	Leu					
785				790				795												
atg	cgt	gct	gag	ttc	aag	aag	atc	ctg	gag	cgc	agg	gat	gcc	ctg	ctg	2451				
Met	Arg	Ala	Glu	Phe	Lys	Lys	Ile	Leu	Glu	Arg	Arg	Asp	Ala	Leu	Leu					
800				805				810												
gtc	atc	cag	tgg	aac	atc	cgg	gcc	ttc	atg	ggg	gtc	aag	aac	tgg	ccc	2499				
Val	Ile	Gln	Trp	Asn	Ile	Arg	Ala	Phe	Met	Gly	Val	Lys	Asn	Trp	Pro					
815				820				825				830								

tgg atg aag ctc tac ttc aag atc aag cct ctg ctg aag agc gcg gag	2547
Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu	
835 840 845	
acg gag aag gag atg gcc acc atg aag gag gag ttc ggg cgc atc aaa	2595
Thr Glu Lys Glu Met Ala Thr Met Lys Glu Glu Phe Gly Arg Ile Lys	
850 855 860	
gag tcc ctg gag aag tcg gag gcc cgc cgc aag gag ctg gag gag aag	2643
Glu Ser Leu Glu Lys Ser Glu Ala Arg Arg Lys Glu Leu Glu Glu Lys	
865 870 875	
atg gtg tcg ctg ctg cag gag aag aat gac ctg cag ctc caa gtg cag	2691
Met Val Ser Leu Leu Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln	
880 885 890	
gcg gaa caa gac aac ctc aat gat gcc gag gag cgc tgc gac cag ctg	2739
Ala Glu Gln Asp Asn Leu Asn Asp Ala Glu Glu Arg Cys Asp Gln Leu	
895 900 905 910	
atc aag aac aag atc cag ctg gag gcc aag gtg aag gag atg aac gag	2787
Ile Lys Asn Lys Ile Gln Leu Glu Ala Lys Val Lys Glu Met Asn Glu	
915 920 925	
agg ctg gag gac gag gag gag atg aac gcc gag ctc act gcc aag aag	2835
Arg Leu Glu Asp Glu Glu Glu Met Asn Ala Glu Leu Thr Ala Lys Lys	
930 935 940	
cgc aag ctg gaa gac gag tgc tcc gag ctc aag aag gac att gac gac	2883
Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp	
945 950 955	
ctg gag ctg acg ctg gcc aag gtg gag aag gag aag cac gca acc gag	2931
Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu	
960 965 970	
aac aag gtg aag aac ctg aca gag gag atg gct ggg ctg gac gag atc	2979
Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Ile	
975 980 985 990	
atc gcc aag ctc acc aag gag aag aaa gct ctg caa gag gcc cac cag	3027
Ile Ala Lys Leu Thr Lys Glu Lys Lys Ala Leu Gln Glu Ala His Gln	
995 1000 1005	
cag gcc cta gat gac ctt cag gct gag gag gac aaa gtc aat act ctg	3075
Gln Ala Leu Asp Asp Leu Gln Ala Glu Glu Asp Lys Val Asn Thr Leu	
1010 1015 1020	
acc aag gcc aag ctc aag ctg gag cag cag gtg gac gat ctg gag gga	3123
Thr Lys Ala Lys Leu Lys Leu Glu Gln Gln Val Asp Asp Leu Glu Gly	
1025 1030 1035	
tcc ctg gag cag gag aag aag gtg cgc atg gac ctg gag cga gcc aag	3171
Ser Leu Glu Gln Glu Lys Lys Val Arg Met Asp Leu Glu Arg Ala Lys	
1040 1045 1050	

cgg aag ctg gag ggt gac ctg aag ctg acc cag gag agc atc atg gac	3219
Arg Lys Leu Glu Gly Asp Leu Lys Leu Thr Gln Glu Ser Ile Met Asp	
1055 1060 1065 1070	
ctg gag aat gac aag ctg cag ctg gag gag agg ctc aag aag aag gag	3267
Leu Glu Asn Asp Lys Leu Gln Leu Glu Glu Arg Leu Lys Lys Lys Glu	
1075 1080 1085	
ttt gac atc agt cag ctg aac agc aag atc gag gat gag cag gca ctg	3315
Phe Asp Ile Ser Gln Leu Asn Ser Lys Ile Glu Asp Glu Gln Ala Leu	
1090 1095 1100	
gcc ctc cag ctg cag aag aag ctg aag gaa aac cag gcc cgc atc gag	3363
Ala Leu Gln Leu Gln Lys Lys Leu Lys Glu Asn Gln Ala Arg Ile Glu	
1105 1110 1115	
gag ctg gag gag gag ctg gag gcc gag cgc act gcc agg gcc aag gtg	3411
Glu Leu Glu Glu Glu Leu Glu Ala Glu Arg Thr Ala Arg Ala Lys Val	
1120 1125 1130	
gag aag ctg cgc tcc gac ctg tcc cgg gag ctg gag gag atc agc gag	3459
Glu Lys Leu Arg Ser Asp Leu Ser Arg Glu Leu Glu Glu Ile Ser Glu	
1135 1140 1145 1150	
cgg ctg gag gag gcc ggc ggg gcc acg tcc gtg cag att gag atg aac	3507
Arg Leu Glu Glu Ala Gly Gly Ala Thr Ser Val Gln Ile Glu Met Asn	
1155 1160 1165	
aag aag cgc gag gcc gag ttc cag aag atg cga cgg gac ctg gag gag	3555
Lys Lys Arg Glu Ala Glu Phe Gln Lys Met Arg Arg Asp Leu Glu Glu	
1170 1175 1180	
gcc acg ctg caa cac gag gcc acg gcc gcc gcc ctg cgc aag aag cac	3603
Ala Thr Leu Gln His Glu Ala Thr Ala Ala Ala Leu Arg Lys Lys His	
1185 1190 1195	
gcg gac agc gtg gcc gag ctg ggc gag cag atc gac aac ctg cag cgg	3651
Ala Asp Ser Val Ala Glu Leu Gly Glu Gln Ile Asp Asn Leu Gln Arg	
1200 1205 1210	
gtg aag cag aag ctg gaa aag gag aag agc gag ttc aag ctg gag ctg	3699
Val Lys Gln Lys Leu Glu Lys Glu Lys Ser Glu Phe Lys Leu Glu Leu	
1215 1220 1225 1230	
gat gac gtc acc tcc aac atg gag cag atc atc aag gcc aag gca aac	3747
Asp Asp Val Thr Ser Asn Met Glu Gln Ile Ile Lys Ala Lys Ala Asn	
1235 1240 1245	
ctg gag aaa gtg tcc cgc acg ctg gaa gac cag gcc aac gag tac cgc	3795
Leu Glu Lys Val Ser Arg Thr Leu Glu Asp Gln Ala Asn Glu Tyr Arg	
1250 1255 1260	
atg aag ctg gag gaa gcc cag cgc tcc ctc aac gac ttc acc acc cag	3843
Met Lys Leu Glu Glu Ala Gln Arg Ser Leu Asn Asp Phe Thr Thr Gln	
1265 1270 1275	
cga gcc aag ctg caa acc gag aac gga gag cta gcc cgg cag ctg gag	3891

Arg Ala Lys Leu Gln Thr Glu Asn Gly Glu Leu Ala Arg Gln Leu Glu	
1280 1285 1290	
gag aag gag gcg ctg atc tcc cag ctg acc cgg ggc aag ctg tcc tac	3939
Glu Lys Glu Ala Leu Ile Ser Gln Leu Thr Arg Gly Lys Leu Ser Tyr	
1295 1300 1305 1310	
acc cag cag atg gag gac ctc aag agg cag ctg gag gag gaa ggc aag	3987
Thr Gln Gln Met Glu Asp Leu Lys Arg Gln Leu Glu Glu Glu Gly Lys	
1315 1320 1325	
gcc aag aac gcc ctg gcc cac gcg ctg cag tgc gcc cgc cat gac tgt	4035
Ala Lys Asn Ala Leu Ala His Ala Leu Gln Ser Ala Arg His Asp Cys	
1330 1335 1340	
gac ctg ctg cgg gag cag tac gag gag gag atg gag gcc aag gcg gag	4083
Asp Leu Leu Arg Glu Gln Tyr Glu Glu Glu Met Glu Ala Lys Ala Glu	
1345 1350 1355	
ctg cag cgc gtc ctg tcc aag gcc aac tgc gag gtg gca cag tgg agg	4131
Leu Gln Arg Val Leu Ser Lys Ala Asn Ser Glu Val Ala Gln Trp Arg	
1360 1365 1370	
acc aaa tat gag acg gac gcc atc cag cgc acc gag gag ctg gag gag	4179
Thr Lys Tyr Glu Thr Asp Ala Ile Gln Arg Thr Glu Glu Leu Glu Glu	
1375 1380 1385 1390	
gcc aag aag aag ctg gcc cag cgg ctg cag gac gcc gag gag gcc gtg	4227
Ala Lys Lys Lys Leu Ala Gln Arg Leu Gln Asp Ala Glu Glu Ala Val	
1395 1400 1405	
gag gcc gtc aac gcc aag tgc tcc tca ctg gag aag acc aag cac cgg	4275
Glu Ala Val Asn Ala Lys Cys Ser Ser Leu Glu Lys Thr Lys His Arg	
1410 1415 1420	
ctg cag aac gag atc gag gac ctc atg gtg gac gtg gag cgc tcc aac	4323
Leu Gln Asn Glu Ile Glu Asp Leu Met Val Asp Val Glu Arg Ser Asn	
1425 1430 1435	
gct gcc gcc gcc gcc ctg gac aag aag cag agg aac ttc gac aag atc	4371
Ala Ala Ala Ala Ala Leu Asp Lys Lys Gln Arg Asn Phe Asp Lys Ile	
1440 1445 1450	
ctg gcc gag tgg aag cag aag tac gag gag tgc cag tgc gag ctg gag	4419
Leu Ala Glu Trp Lys Gln Lys Tyr Glu Glu Ser Gln Ser Glu Leu Glu	
1455 1460 1465 1470	
tcc tgc cag aag gag gcg cgc tcc ctc agc acc gag ctc ttc aag ctc	4467
Ser Ser Gln Lys Glu Ala Arg Ser Leu Ser Thr Glu Leu Phe Lys Leu	
1475 1480 1485	
aag aac gcc tac gag gag tcc ctg gag cac ctg gag acc ttc aag cgg	4515
Lys Asn Ala Tyr Glu Glu Ser Leu Glu His Leu Glu Thr Phe Lys Arg	
1490 1495 1500	
gag aac aag aac ctg cag gag gag atc tct gac ctg acg gag cag ctg	4563
Glu Asn Lys Asn Leu Gln Glu Glu Ile Ser Asp Leu Thr Glu Gln Leu	

1505	1510	1515	
gga gaa gga ggc aag aat ctg cac gag ctg gag aag gtc cgc aag cag			4611
Gly Glu Gly Gly Lys Asn Leu His Glu Leu Glu Lys Val Arg Lys Gln			
1520	1525	1530	
ctg gag gcc gag aag ctg gag ctg cag tcg gcc ctg gag gag gcc gag			4659
Leu Glu Ala Glu Lys Leu Glu Leu Gln Ser Ala Leu Glu Glu Ala Glu			
1535	1540	1545	1550
gcc tcc ctg gag cac gag gaa ggc aag atc ctc cgg gcc cag ctg gag			4707
Ala Ser Leu Glu His Glu Glu Gly Lys Ile Leu Arg Ala Gln Leu Glu			
1555	1560	1565	
ttc aac cag atc aag gcg gag atc gag cgg aag ctg gtg gag aag gac			4755
Phe Asn Gln Ile Lys Ala Glu Ile Glu Arg Lys Leu Val Glu Lys Asp			
1570	1575	1580	
gag gag atg gaa cag gcc aag cgc aac cac ctg cgg gtg gtg gac tca			4803
Glu Glu Met Glu Gln Ala Lys Arg Asn His Leu Arg Val Val Asp Ser			
1585	1590	1595	
ctg cag acc tcc ctg gat gca gag acg cgc agc cgc aac gag gcc ctg			4851
Leu Gln Thr Ser Leu Asp Ala Glu Thr Arg Ser Arg Asn Glu Ala Leu			
1600	1605	1610	
cgg gtg aag aag aag atg gag ggc gac ctc aac gag atg gag atc cag			4899
Arg Val Lys Lys Lys Met Glu Gly Asp Leu Asn Glu Met Glu Ile Gln			
1615	1620	1625	1630
ctc agc cag gcc aac agg acg gcc tcc gag gcc cag aag cac ctg aag			4947
Leu Ser Gln Ala Asn Arg Thr Ala Ser Glu Ala Gln Lys His Leu Lys			
1635	1640	1645	
aac gcc caa gcc cac ctg aag gac acc cag atc cag ctg gat gac gcg			4995
Asn Ala Gln Ala His Leu Lys Asp Thr Gln Ile Gln Leu Asp Asp Ala			
1650	1655	1660	
gtc cgg gcc aat gac gac ctg aag gag aac atc gcc atc gtg gag cgg			5043
Val Arg Ala Asn Asp Asp Leu Lys Glu Asn Ile Ala Ile Val Glu Arg			
1665	1670	1675	
cgc aac gcg ctg ctg cag gcc gag ctg gag gag ctg cgg gcc gtg gtg			5091
Arg Asn Ala Leu Leu Gln Ala Glu Leu Glu Glu Leu Arg Ala Val Val			
1680	1685	1690	
gag cag acg gag cgg tct cgg aag ctg gca gag cag gag ctg atc gag			5139
Glu Gln Thr Glu Arg Ser Arg Lys Leu Ala Glu Gln Glu Leu Ile Glu			
1695	1700	1705	1710
acc agc gag cgg gtg cag ctg ctg cac tcc cag aac acc agc ctc atc			5187
Thr Ser Glu Arg Val Gln Leu Leu His Ser Gln Asn Thr Ser Leu Ile			
1715	1720	1725	
aac cag aag aag aag atg gag tcg gac ctg acc cag ctg cag acg gaa			5235
Asn Gln Lys Lys Lys Met Glu Ser Asp Leu Thr Gln Leu Gln Thr Glu			
1730	1735	1740	

gtg gag gag gcg gtg cag gaa tgc agg aac gcc gag gag aag gcc aag 5283
 Val Glu Glu Ala Val Gln Glu Cys Arg Asn Ala Glu Glu Lys Ala Lys
 1745 1750 1755

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 Lys Ala Ile Thr Asp Ala Ala Met Met Ala Glu Glu Leu Lys Lys Glu
 1760 1765 1770

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 Gln Asp Thr Ser Ala His Leu Glu Arg Met Lys Lys Asn Met Glu Gln
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 acc att aag gac ctg cag cac cgg ctg gac gag gcc gag cag atc gcc 5427
 Thr Ile Lys Asp Leu Gln His Arg Leu Asp Glu Ala Glu Gln Ile Ala
 1795 1800 1805

 ctc aag ggc ggc aag aag cag ctg cag aag ctg gag gcg cgg gtg cgg 5475
 Leu Lys Gly Gly Lys Lys Gln Leu Gln Lys Leu Glu Ala Arg Val Arg
 1810 1815 1820

 gag ctg gag aat gag ctg gag gcc gag cag aag cgc aac gcg gag tcg 5523
 Glu Leu Glu Asn Glu Leu Glu Ala Glu Gln Lys Arg Asn Ala Glu Ser
 1825 1830 1835

 gtg aag ggc atg agg aag agc gag cgg cgc atc aag gag ctc acc tac 5571
 Val Lys Gly Met Arg Lys Ser Glu Arg Arg Ile Lys Glu Leu Thr Tyr
 1840 1845 1850

 cag acg gag gag gac aag aag aac ctg ctg cgg ctg cag gac ctg gtg 5619
 Gln Thr Glu Glu Asp Lys Lys Asn Leu Leu Arg Leu Gln Asp Leu Val
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 gac aag ctg cag ctg aag gtc aag gcc tac aag cgc cag gcc gag gag 5667
 Asp Lys Leu Gln Leu Lys Val Lys Ala Tyr Lys Arg Gln Ala Glu Glu
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 Ala Glu Glu Gln Ala Asn Thr Asn Leu Ser Lys Phe Arg Lys Val Gln
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 His Glu Leu Asp Glu Ala Glu Glu Arg Ala Asp Ile Ala Glu Ser Gln
 1905 1910 1915

 gtc aac aag ctg cgg gcc aag agc cgc gac atc ggc gcc aag caa aaa 5811
 Val Asn Lys Leu Arg Ala Lys Ser Arg Asp Ile Gly Ala Lys Gln Lys
 1920 1925 1930

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 Met His Asp Glu Glu
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Lys Lys Leu Ala Gln Arg Leu Gln Asp Ala Glu Glu Ala Val Glu Ala		1390
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Gln Lys Glu Ala Arg Ser Leu Ser Thr Glu Leu Phe Lys Leu Lys Asn		1470
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Ala Tyr Glu Glu Ser Leu Glu His Leu Glu Thr Phe Lys Arg Glu Asn		1485
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Lys Asn Leu Gln Glu Glu Ile Ser Asp Leu Thr Glu Gln Leu Gly Glu		1500
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Gly Gly Lys Asn Leu His Glu Leu Glu Lys Val Arg Lys Gln Leu Glu		1520
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cagttggatg caggctccag gccaggaaaag cagggaaatt tcccgttgca gaaacggggc 4740
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agggagagc tcagggaggg gaaggcagag tggacagatg ggaggaacca gcttcttccg 6900
ctcactacag gtacagaatt caag atg gat gac tcc cag atg gcc gac ttt 6951

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Met Asp Asp Ser Gln Met Ala Asp Phe

1

5

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ggg gcg gca gcc cag tac ctc cgc aag tcc gag aaa gag cgt cta gag 6999
Gly Ala Ala Ala Gln Tyr Leu Arg Lys Ser Glu Lys Glu Arg Leu Glu
10 15 20 25

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gcc cag aca cgg cct ttc gac atc cgc act gag tgc ttt gtg ccc gat 7047
Ala Gln Thr Arg Pro Phe Asp Ile Arg Thr Glu Cys Phe Val Pro Asp
30 35 40

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gac aag gag gag ttc gtc aag gcc aag atc gtg tct cgg gag gga ggc 7095
Asp Lys Glu Glu Phe Val Lys Ala Lys Ile Val Ser Arg Glu Gly Gly
45 50 55

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aag gtc acc gcc gaa acc gag aac ggc aag acg gtg acc gtg aag gag 7143
Lys Val Thr Ala Glu Thr Glu Asn Gly Lys Thr Val Thr Val Lys Glu
60 65 70

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gac cag gtg ttg cag cag aac cca ccc aag ttc gac aag atc gag gac	7191
Asp Gln Val Leu Gln Gln Asn Pro Pro Lys Phe Asp Lys Ile Glu Asp	
75 80 85	
atg gcc atg ctg acc ttc cta cac gag ccc gct gta ctc tac aac ctc	7239
Met Ala Met Leu Thr Phe Leu His Glu Pro Ala Val Leu Tyr Asn Leu	
90 95 100 105	
aag gag cgc tac gcg gct tgg atg att tac acc tac tcg ggc ctc ttc	7287
Lys Glu Arg Tyr Ala Ala Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe	
110 115 120	
tgc gtc acc gtc aac ccc tac aag tgg ctg ccg gtg tac aat gca gag	7335
Cys Val Thr Val Asn Pro Tyr Lys Trp Leu Pro Val Tyr Asn Ala Glu	
125 130 135	
gtg gtg gcc gcc tac cgg ggc aag aag agg agc gag gcc ccg ccc cac	7383
Val Val Ala Ala Tyr Arg Gly Lys Lys Arg Ser Glu Ala Pro Pro His	
140 145 150	
atc ttc tcc atc tct gac aac gcc tat cag tac atg cta aca gat cgg	7431
Ile Phe Ser Ile Ser Asp Asn Ala Tyr Gln Tyr Met Leu Thr Asp Arg	
155 160 165	
gaa aac cag tcc atc ctc atc acc gga gaa tcc ggg gcg ggg aag aca	7479
Glu Asn Gln Ser Ile Leu Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr	
170 175 180 185	
gtg aac acc aag cgt gtc atc cag tac ttt gcc agt att gca gcc att	7527
Val Asn Thr Lys Arg Val Ile Gln Tyr Phe Ala Ser Ile Ala Ala Ile	
190 195 200	
ggt gac cgg ggc aag aag gac aac gtc aat gcc aac aag ggc acc ctg	7575
Gly Asp Arg Gly Lys Lys Asp Asn Val Asn Ala Asn Lys Gly Thr Leu	
205 210 215	
gag gac cag atc atc cag gcc aac cct gcc ttg gag gcc ttc ggc aac	7623
Glu Asp Gln Ile Ile Gln Ala Asn Pro Ala Leu Glu Ala Phe Gly Asn	
220 225 230	
gcc aag acc gtc cgg aac gac aac tcc tcg cgc ttc ggg aaa ttc atc	7671
Ala Lys Thr Val Arg Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile	
235 240 245	
aga atc cac ttt gga gcc act gga aag ctg gct tct gcg gac ata gag	7719
Arg Ile His Phe Gly Ala Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu	
250 255 260 265	
acc tac ctg ctg gag aag tcc cgg gtg atc ttc cag ctg aag gct gag	7767
Thr Tyr Leu Leu Glu Lys Ser Arg Val Ile Phe Gln Leu Lys Ala Glu	
270 275 280	
agg aac tac cac atc ttc tac cag atc ctg tcc aac aag aag ccg gag	7815
Arg Asn Tyr His Ile Phe Tyr Gln Ile Leu Ser Asn Lys Lys Pro Glu	
285 290 295	
ctg ctg gac atg ctg ctg atc aca aac aac ccc tac gac tac gcc ttc	7863

Leu	Leu	Asp	Met	Leu	Leu	Ile	Thr	Asn	Asn	Pro	Tyr	Asp	Tyr	Ala	Phe		
		300					305					310					
gtg	tcc	cag	gga	gag	gtg	tcc	gtg	gcc	tcc	atc	gac	gac	tcc	gag	gag	7911	
Val	Ser	Gln	Gly	Glu	Val	Ser	Val	Ala	Ser	Ile	Asp	Asp	Ser	Glu	Glu		
	315					320					325						
ctc	atg	gcc	acc	gat	aac	gcc	ttc	gac	gtg	ctg	ggc	ttc	agt	tct	gag	7959	
Leu	Met	Ala	Thr	Asp	Asn	Ala	Phe	Asp	Val	Leu	Gly	Phe	Ser	Ser	Glu		
330					335					340					345		
gag	aaa	gtc	ggc	atc	tac	aag	ctg	acg	ggc	gcc	atc	atg	cac	tac	gga	8007	
Glu	Lys	Val	Gly	Ile	Tyr	Lys	Leu	Thr	Gly	Ala	Ile	Met	His	Tyr	Gly		
				350					355					360			
aac	atg	aag	ttc	aag	cag	aag	cag	cgt	gag	gag	cag	gcg	gag	ccg	gac	8055	
Asn	Met	Lys	Phe	Lys	Gln	Lys	Gln	Arg	Glu	Glu	Gln	Ala	Glu	Pro	Asp		
		365					370					375					
ggc	acc	gaa	gat	gcc	gac	aag	tcc	gcc	tac	ctc	atg	ggg	ctg	aac	tcc	8103	
Gly	Thr	Glu	Asp	Ala	Asp	Lys	Ser	Ala	Tyr	Leu	Met	Gly	Leu	Asn	Ser		
	380						385					390					
gct	gac	ctg	ctc	aag	ggg	ctg	tgc	cac	cct	cgg	gtg	aaa	gtg	ggc	aac	8151	
Ala	Asp	Leu	Leu	Lys	Gly	Leu	Cys	His	Pro	Arg	Val	Lys	Val	Gly	Asn		
	395					400					405						
gag	tac	gtc	acc	aag	ggg	cag	aac	gtg	cag	cag	gtg	tac	tac	tcc	atc	8199	
Glu	Tyr	Val	Thr	Lys	Gly	Gln	Asn	Val	Gln	Gln	Val	Tyr	Tyr	Ser	Ile		
410					415					420					425		
ggg	gcg	ctg	gcc	aag	gcc	gtg	tac	gag	aag	atg	ttc	aac	tgg	atg	gtg	8247	
Gly	Ala	Leu	Ala	Lys	Ala	Val	Tyr	Glu	Lys	Met	Phe	Asn	Trp	Met	Val		
				430					435					440			
atg	cgc	atc	aat	gcc	acg	ctg	gag	acc	aag	ctg	ccg	cgc	cag	tac	ttc	8295	
Met	Arg	Ile	Asn	Ala	Thr	Leu	Glu	Thr	Lys	Leu	Pro	Arg	Gln	Tyr	Phe		
		445					450					455					
ata	ggc	gtc	ctc	gac	atc	gcg	ggc	ttc	gag	atc	ttt	gac	ttc	aac	agc	8343	
Ile	Gly	Val	Leu	Asp	Ile	Ala	Gly	Phe	Glu	Ile	Phe	Asp	Phe	Asn	Ser		
	460					465					470						
ttt	gag	cag	ctt	tgc	atc	aac	ttc	acc	aac	gag	aag	ctg	cag	cag	ttc	8391	
Phe	Glu	Gln	Leu	Cys	Ile	Asn	Phe	Thr	Asn	Glu	Lys	Leu	Gln	Gln	Phe		
	475					480					485						
ttc	aac	cac	cac	atg	ttc	gtg	ctg	gag	cag	gag	gag	tac	aag	aag	gag	8439	
Phe	Asn	His	His	Met	Phe	Val	Leu	Glu	Gln	Glu	Glu	Tyr	Lys	Lys	Glu		
490					495					500					505		
ggc	atc	gag	tgg	gag	ttc	atc	gac	ttc	ggc	atg	gac	ctg	cag	gcc	tgc	8487	
Gly	Ile	Glu	Trp	Glu	Phe	Ile	Asp	Phe	Gly	Met	Asp	Leu	Gln	Ala	Cys		
				510					515					520			
atc	gac	ctc	att	gag	aag	ccc	atg	ggc	atc	atg	tcc	atc	ctg	gag	gag	8535	
Ile	Asp	Leu	Ile	Glu	Lys	Pro	Met	Gly	Ile	Met	Ser	Ile	Leu	Glu	Glu		

525					530					535					
gag tgc atg ttc ccc aag gcc acc gac atg acc ttc aag gcc aag cta	8583														
Glu Cys Met Phe Pro Lys Ala Thr Asp Met Thr Phe Lys Ala Lys Leu															
540	545	550													
tac gac aac cac ctg ggc aag tcc aac aac ttc cag aag cca cgc aac	8631														
Tyr Asp Asn His Leu Gly Lys Ser Asn Asn Phe Gln Lys Pro Arg Asn															
555	560	565													
gtc aag ggg aag cag gaa gcc cac ttc tcc ctg gtc cac tac gcc ggc	8679														
Val Lys Gly Lys Gln Glu Ala His Phe Ser Leu Val His Tyr Ala Gly															
570	575	580	585												
acc gtg gac tac aac atc ctg ggc tgg ctg gag aag aac aag gac cct	8727														
Thr Val Asp Tyr Asn Ile Leu Gly Trp Leu Glu Lys Asn Lys Asp Pro															
590	595	600													
ctc aac gag acg gtg gtg ggc ctg tac cag aag tcc tcc ctc aag ctg	8775														
Leu Asn Glu Thr Val Val Gly Leu Tyr Gln Lys Ser Ser Leu Lys Leu															
605	610	615													
atg gcc acc ctc ttc gcc acc tat gct tct gcc gac act gcg gac act	8823														
Met Ala Thr Leu Phe Ala Thr Tyr Ala Ser Ala Asp Thr Ala Asp Thr															
620	625	630													
ggc aaa ggc aaa gga ggc aag aaa aag ggc tcg tcc ttc cag aca gtg	8871														
Gly Lys Gly Lys Gly Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val															
635	640	645													
tca gct ctc cac cgg gaa aat ctg aac aag ctg atg acc aac ctg agg	8919														
Ser Ala Leu His Arg Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg															
650	655	660	665												
acc acc cac cct cac ttc gtg cgc tgc atc atc ccc aat gag cgg aag	8967														
Thr Thr His Pro His Phe Val Arg Cys Ile Ile Pro Asn Glu Arg Lys															
670	675	680													
gct cca ggg gtg atg gac aac ccc ctg gtc atg cac cag ctg cgt tgc	9015														
Ala Pro Gly Val Met Asp Asn Pro Leu Val Met His Gln Leu Arg Cys															
685	690	695													
aac ggc gtg ctg gaa ggc att cgc atc tgc agg aag ggc ttc ccc aac	9063														
Asn Gly Val Leu Glu Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Asn															
700	705	710													
cgc atc ctc tac ggg gac ttc cgg cag agg tac cgc atc ctg aac cca	9111														
Arg Ile Leu Tyr Gly Asp Phe Arg Gln Arg Tyr Arg Ile Leu Asn Pro															
715	720	725													
gcg gcc atc cct gag ggc cag ttc att gac agc agg aag ggg gcg gag	9159														
Ala Ala Ile Pro Glu Gly Gln Phe Ile Asp Ser Arg Lys Gly Ala Glu															
730	735	740	745												
aag ctg ctg ggc tcc ctg gac att gac cac aac cag tac aag ttc ggc	9207														
Lys Leu Leu Gly Ser Leu Asp Ile Asp His Asn Gln Tyr Lys Phe Gly															
750	755	760													

cac acc aag gtg ttc ttc aag gcc ggg ctg ctg ggg ctg ctg gag gag	9255
His Thr Lys Val Phe Phe Lys Ala Gly Leu Leu Gly Leu Leu Glu Glu	
765 770 775	
atg cgg gac gag agg ctg agc cgc atc atc acg cgc atc cag gcc cag	9303
Met Arg Asp Glu Arg Leu Ser Arg Ile Ile Thr Arg Ile Gln Ala Gln	
780 785 790	
tcc cgg ggc cag ctc atg cgt gct gag ttc aag aag atc ctg gag cgc	9351
Ser Arg Gly Gln Leu Met Arg Ala Glu Phe Lys Lys Ile Leu Glu Arg	
795 800 805	
agg gat gcc ctg ctg gtc atc cag tgg aac atc cgg gcc ttc atg ggg	9399
Arg Asp Ala Leu Leu Val Ile Gln Trp Asn Ile Arg Ala Phe Met Gly	
810 815 820 825	
gtc aag aac tgg ccc tgg atg aag ctc tac ttc aag atc aag cct ctg	9447
Val Lys Asn Trp Pro Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu	
830 835 840	
ctg aag agc gcg gag acg gag aag gag atg gcc acc atg aag gag gag	9495
Leu Lys Ser Ala Glu Thr Glu Lys Glu Met Ala Thr Met Lys Glu Glu	
845 850 855	
ttc ggg cgc atc aaa gag tcc ctg gag aag tcg gag gcc cgc cgc aag	9543
Phe Gly Arg Ile Lys Glu Ser Leu Glu Lys Ser Glu Ala Arg Arg Lys	
860 865 870	
gag ctg gag gag aag atg gtg tcg ctg ctg cag gag aag aat gac ctg	9591
Glu Leu Glu Glu Lys Met Val Ser Leu Leu Gln Glu Lys Asn Asp Leu	
875 880 885	
cag ctc caa gtg cag gcg gaa caa gac aac ctc aat gat gcc gag gag	9639
Gln Leu Gln Val Gln Ala Glu Gln Asp Asn Leu Asn Asp Ala Glu Glu	
890 895 900 905	
cgc tgc gac cag ctg atc aag aac aag atc cag ctg gag gcc aag gtg	9687
Arg Cys Asp Gln Leu Ile Lys Asn Lys Ile Gln Leu Glu Ala Lys Val	
910 915 920	
aag gag atg aac gag agg ctg gag gac gag gag gag atg aac gcc gag	9735
Lys Glu Met Asn Glu Arg Leu Glu Asp Glu Glu Glu Met Asn Ala Glu	
925 930 935	
ctc act gcc aag aag cgc aag ctg gaa gac gag tgc tcc gag ctc aag	9783
Leu Thr Ala Lys Lys Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys	
940 945 950	
aag gac att gac gac ctg gag ctg acg ctg gcc aag gtg gag aag gag	9831
Lys Asp Ile Asp Asp Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu	
955 960 965	
aag cac gca acc gag aac aag gtg aag aac ctg aca gag gag atg gct	9879
Lys His Ala Thr Glu Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala	
970 975 980 985	

ggg ctg gac gag atc atc gcc aag ctc acc aag gag aag aaa gct ctg	9927
Gly Leu Asp Glu Ile Ile Ala Lys Leu Thr Lys Glu Lys Lys Ala Leu	
990 995 1000	
caa gag gcc cac cag cag gcc cta gat gac ctt cag gct gag gag gac	9975
Gln Glu Ala His Gln Gln Ala Leu Asp Asp Leu Gln Ala Glu Glu Asp	
1005 1010 1015	
aaa gtc aat act ctg acc aag gcc aag ctc aag ctg gag cag cag gtg	10023
Lys Val Asn Thr Leu Thr Lys Ala Lys Leu Lys Leu Glu Gln Gln Val	
1020 1025 1030	
gac gat ctg gag gga tcc ctg gag cag gag aag aag gtg cgc atg gac	10071
Asp Asp Leu Glu Gly Ser Leu Glu Gln Glu Lys Lys Val Arg Met Asp	
1035 1040 1045	
ctg gag cga gcc aag cgg aag ctg gag ggt gac ctg aag ctg acc cag	10119
Leu Glu Arg Ala Lys Arg Lys Leu Glu Gly Asp Leu Lys Leu Thr Gln	
1050 1055 1060 1065	
gag agc atc atg gac ctg gag aat gac aag ctg cag ctg gag gag agg	10167
Glu Ser Ile Met Asp Leu Glu Asn Asp Lys Leu Gln Leu Glu Glu Arg	
1070 1075 1080	
ctc aag aag aag gag ttt gac atc agt cag ctg aac agc aag atc gag	10215
Leu Lys Lys Lys Glu Phe Asp Ile Ser Gln Leu Asn Ser Lys Ile Glu	
1085 1090 1095	
gat gag cag gca ctg gcc ctc cag ctg cag aag aag ctg aag gaa aac	10263
Asp Glu Gln Ala Leu Ala Leu Gln Leu Gln Lys Lys Leu Lys Glu Asn	
1100 1105 1110	
cag gcc cgc atc gag gag ctg gag gag gag ctg gag gcc gag cgc act	10311
Gln Ala Arg Ile Glu Glu Leu Glu Glu Glu Leu Glu Ala Glu Arg Thr	
1115 1120 1125	
gcc agg gcc aag gtg gag aag ctg cgc tcc gac ctg tcc cgg gag ctg	10359
Ala Arg Ala Lys Val Glu Lys Leu Arg Ser Asp Leu Ser Arg Glu Leu	
1130 1135 1140 1145	
gag gag atc agc gag cgg ctg gag gag gcc ggc ggg gcc acg tcc gtg	10407
Glu Glu Ile Ser Glu Arg Leu Glu Glu Ala Gly Gly Ala Thr Ser Val	
1150 1155 1160	
cag att gag atg aac aag aag cgc gag gcc gag ttc cag aag atg cga	10455
Gln Ile Glu Met Asn Lys Lys Arg Glu Ala Glu Phe Gln Lys Met Arg	
1165 1170 1175	
cgg gac ctg gag gag gcc acg ctg caa cac gag gcc acg gcc gcc gcc	10503
Arg Asp Leu Glu Glu Ala Thr Leu Gln His Glu Ala Thr Ala Ala Ala	
1180 1185 1190	
ctg cgc aag aag cac gcg gac agc gtg gcc gag ctg ggc gag cag atc	10551
Leu Arg Lys Lys His Ala Asp Ser Val Ala Glu Leu Gly Glu Gln Ile	
1195 1200 1205	
gac aac ctg cag cgg gtg aag cag aag ctg gaa aag gag aag agc gag	10599

Asp Asn Leu Gln Arg Val Lys Gln Lys Leu Glu Lys Glu Lys Ser Glu	
1210 1215 1220 1225	
ttc aag ctg gag ctg gat gac gtc acc tcc aac atg gag cag atc atc	10647
Phe Lys Leu Glu Leu Asp Asp Val Thr Ser Asn Met Glu Gln Ile Ile	
1230 1235 1240	
aag gcc aag gca aac ctg gag aaa gtg tcc cgc acg ctg gaa gac cag	10695
Lys Ala Lys Ala Asn Leu Glu Lys Val Ser Arg Thr Leu Glu Asp Gln	
1245 1250 1255	
gcc aac gag tac cgc atg aag ctg gag gaa gcc cag cgc tcc ctc aac	10743
Ala Asn Glu Tyr Arg Met Lys Leu Glu Glu Ala Gln Arg Ser Leu Asn	
1260 1265 1270	
gac ttc acc acc cag cga gcc aag ctg caa acc gag aac gga gag cta	10791
Asp Phe Thr Thr Gln Arg Ala Lys Leu Gln Thr Glu Asn Gly Glu Leu	
1275 1280 1285	
gcc cgg cag ctg gag gag aag gag gcg ctg atc tcc cag ctg acc cgg	10839
Ala Arg Gln Leu Glu Glu Lys Glu Ala Leu Ile Ser Gln Leu Thr Arg	
1290 1295 1300 1305	
ggc aag ctg tcc tac acc cag cag atg gag gac ctc aag agg cag ctg	10887
Gly Lys Leu Ser Tyr Thr Gln Gln Met Glu Asp Leu Lys Arg Gln Leu	
1310 1315 1320	
gag gag gaa ggc aag gcc aag aac gcc ctg gcc cac gcg ctg cag tcg	10935
Glu Glu Glu Gly Lys Ala Lys Asn Ala Leu Ala His Ala Leu Gln Ser	
1325 1330 1335	
gcc cgc cat gac tgt gac ctg ctg cgg gag cag tac gag gag gag atg	10983
Ala Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr Glu Glu Glu Met	
1340 1345 1350	
gag gcc aag gcg gag ctg cag cgc gtc ctg tcc aag gcc aac tcg gag	11031
Glu Ala Lys Ala Glu Leu Gln Arg Val Leu Ser Lys Ala Asn Ser Glu	
1355 1360 1365	
gtg gca cag tgg agg acc aaa tat gag acg gac gcc atc cag cgc acc	11079
Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr Asp Ala Ile Gln Arg Thr	
1370 1375 1380 1385	
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Glu Glu Leu Glu Glu Ala Lys Lys Lys Leu Ala Gln Arg Leu Gln Asp	
1390 1395 1400	
gcc gag gag gcc gtg gag gcc gtc aac gcc aag tgc tcc tca ctg gag	11175
Ala Glu Glu Ala Val Glu Ala Val Asn Ala Lys Cys Ser Ser Leu Glu	
1405 1410 1415	
aag acc aag cac cgg ctg cag aac gag atc gag gac ctc atg gtg gac	11223
Lys Thr Lys His Arg Leu Gln Asn Glu Ile Glu Asp Leu Met Val Asp	
1420 1425 1430	
gtg gag cgc tcc aac gct gcc gcc gcc gcc ctg gac aag aag cag agg	11271
Val Glu Arg Ser Asn Ala Ala Ala Ala Leu Asp Lys Lys Gln Arg	

1435	1440	1445	
aac ttc gac aag atc ctg gcc gag tgg aag cag aag tac gag gag tcg			11319
Asn Phe Asp Lys Ile Leu Ala Glu Trp Lys Gln Lys Tyr Glu Glu Ser			
1450	1455	1460	1465
cag tcg gag ctg gag tcc tcg cag aag gag gcg cgc tcc ctc agc acc			11367
Gln Ser Glu Leu Glu Ser Ser Gln Lys Glu Ala Arg Ser Leu Ser Thr			
	1470	1475	1480
gag ctc ttc aag ctc aag aac gcc tac gag gag tcc ctg gag cac ctg			11415
Glu Leu Phe Lys Leu Lys Asn Ala Tyr Glu Glu Ser Leu Glu His Leu			
	1485	1490	1495
gag acc ttc aag cgg gag aac aag aac ctg cag gag gag atc tct gac			11463
Glu Thr Phe Lys Arg Glu Asn Lys Asn Leu Gln Glu Glu Ile Ser Asp			
	1500	1505	1510
ctg acg gag cag ctg gga gaa gga ggc aag aat ctg cac gag ctg gag			11511
Leu Thr Glu Gln Leu Gly Glu Gly Gly Lys Asn Leu His Glu Leu Glu			
	1515	1520	1525
aag gtc cgc aag cag ctg gag gcc gag aag ctg gag ctg cag tcg gcc			11559
Lys Val Arg Lys Gln Leu Glu Ala Glu Lys Leu Glu Leu Gln Ser Ala			
	1530	1535	1540
ctg gag gag gcc gag gcc tcc ctg gag cac gag gaa ggc aag atc ctc			11607
Leu Glu Glu Ala Glu Ala Ser Leu Glu His Glu Glu Gly Lys Ile Leu			
	1550	1555	1560
cgg gcc cag ctg gag ttc aac cag atc aag gcg gag atc gag cgg aag			11655
Arg Ala Gln Leu Glu Phe Asn Gln Ile Lys Ala Glu Ile Glu Arg Lys			
	1565	1570	1575
ctg gtg gag aag gac gag gag atg gaa cag gcc aag cgc aac cac ctg			11703
Leu Val Glu Lys Asp Glu Glu Met Glu Gln Ala Lys Arg Asn His Leu			
	1580	1585	1590
cgg gtg gtg gac tca ctg cag acc tcc ctg gat gca gag acg cgc agc			11751
Arg Val Val Asp Ser Leu Gln Thr Ser Leu Asp Ala Glu Thr Arg Ser			
	1595	1600	1605
cgc aac gag gcc ctg cgg gtg aag aag aag atg gag ggc gac ctc aac			11799
Arg Asn Glu Ala Leu Arg Val Lys Lys Lys Met Glu Gly Asp Leu Asn			
	1610	1615	1620
gag atg gag atc cag ctc agc cag gcc aac agg acg gcc tcc gag gcc			11847
Glu Met Glu Ile Gln Leu Ser Gln Ala Asn Arg Thr Ala Ser Glu Ala			
	1630	1635	1640
cag aag cac ctg aag aac gcc caa gcc cac ctg aag gac acc cag atc			11895
Gln Lys His Leu Lys Asn Ala Gln Ala His Leu Lys Asp Thr Gln Ile			
	1645	1650	1655
cag ctg gat gac gcg gtc cgg gcc aat gac gac ctg aag gag aac atc			11943
Gln Leu Asp Asp Ala Val Arg Ala Asn Asp Asp Leu Lys Glu Asn Ile			
	1660	1665	1670

gcc atc gtg gag cgg cgc aac gcg ctg ctg cag gcc gag ctg gag gag Ala Ile Val Glu Arg Arg Asn Ala Leu Leu Gln Ala Glu Leu Glu Glu 1675 1680 1685	11991
ctg cgg gcc gtg gtg gag cag acg gag cgg tct cgg aag ctg gca gag Leu Arg Ala Val Val Glu Gln Thr Glu Arg Ser Arg Lys Leu Ala Glu 1690 1695 1700 1705	12039
cag gag ctg atc gag acc agc gag cgg gtg cag ctg ctg cac tcc cag Gln Glu Leu Ile Glu Thr Ser Glu Arg Val Gln Leu Leu His Ser Gln 1710 1715 1720	12087
aac acc agc ctc atc aac cag aag aag aag atg gag tcg gac ctg acc Asn Thr Ser Leu Ile Asn Gln Lys Lys Lys Met Glu Ser Asp Leu Thr 1725 1730 1735	12135
cag ctg cag acg gaa gtg gag gag gcg gtg cag gaa tgc agg aac gcc Gln Leu Gln Thr Glu Val Glu Glu Ala Val Gln Glu Cys Arg Asn Ala 1740 1745 1750	12183
gag gag aag gcc aag aag gcc atc acg gac gcc gcc atg atg gcg gag Glu Glu Lys Ala Lys Lys Ala Ile Thr Asp Ala Ala Met Met Ala Glu 1755 1760 1765	12231
gag ctg aag aag gag cag gac acc agc gcc cac ctg gag cgc atg aag Glu Leu Lys Lys Glu Gln Asp Thr Ser Ala His Leu Glu Arg Met Lys 1770 1775 1780 1785	12279
aag aac atg gag cag acc att aag gac ctg cag cac cgg ctg gac gag Lys Asn Met Glu Gln Thr Ile Lys Asp Leu Gln His Arg Leu Asp Glu 1790 1795 1800	12327
gcc gag cag atc gcc ctc aag ggc ggc aag aag cag ctg cag aag ctg Ala Glu Gln Ile Ala Leu Lys Gly Gly Lys Lys Gln Leu Gln Lys Leu 1805 1810 1815	12375
gag gcg cgg gtg cgg gag ctg gag aat gag ctg gag gcc gag cag aag Glu Ala Arg Val Arg Glu Leu Glu Asn Glu Leu Glu Ala Glu Gln Lys 1820 1825 1830	12423
cgc aac gcg gag tcg gtg aag ggc atg agg aag agc gag cgg cgc atc Arg Asn Ala Glu Ser Val Lys Gly Met Arg Lys Ser Glu Arg Arg Ile 1835 1840 1845	12471
aag gag ctc acc tac cag acg gag gag gac aag aag aac ctg ctg cgg Lys Glu Leu Thr Tyr Gln Thr Glu Glu Asp Lys Lys Asn Leu Leu Arg 1850 1855 1860 1865	12519
ctg cag gac ctg gtg gac aag ctg cag ctg aag gtc aag gcc tac aag Leu Gln Asp Leu Val Asp Lys Leu Gln Leu Lys Val Lys Ala Tyr Lys 1870 1875 1880	12567
cgc cag gcc gag gag gcg gag gag cag gcc aac acc aac ctg tcc aag Arg Gln Ala Glu Glu Ala Glu Glu Gln Ala Asn Thr Asn Leu Ser Lys 1885 1890 1895	12615

ttc cgc aag gtg cag cac gag ctg gac gag gcg gag gag cgg gca gac	12663
Phe Arg Lys Val Gln His Glu Leu Asp Glu Ala Glu Glu Arg Ala Asp	
1900 1905 1910	
atc gcg gag tcc cag gtc aac aag ctg cgg gcc aag agc cgc gac atc	12711
Ile Ala Glu Ser Gln Val Asn Lys Leu Arg Ala Lys Ser Arg Asp Ile	
1915 1920 1925	
ggc gcc aag caa aaa atg cac gac gag gag tga cgccgcctcc ggaacccgc	12764
Gly Ala Lys Gln Lys Met His Asp Glu Glu *	
1930 1935	
tcttgттаac ccgcaataaa cacgagtgcc tgaattc	12801